Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

Claims 1-12 (cancelled).

Claim 13 (new). A circuit for reducing the crest factor of a data symbol to be transmitted in a multi-carrier data transmission system, the data symbol being a function of a plurality of signals provided within a predetermined time interval, each of the plurality of signals allocated to a carrier, each carrier occupying at least one frequency from a transmit data spectrum, at least one carrier being reserved which is not provided for data transmission, the circuit comprising:

a transmit path configured to receive the data symbol;

a model path arranged in parallel with a section of the transmit path the model path comprising,

a model filter configured to receive at least periodically the data symbol in non-oversampled format, the non-oversampled data symbol exhibiting a non-flat PSD power spectrum,

an analysis and evaluation circuit arranged following the model filter and configured to determine whether the time domain function of the data symbol exhibits within a predetermined time interval at least one maximum which exceeds a first

threshold, and further configured to determine an associated position of the maximum

within the time interval, and, by scaling and displacing a dirac-like sample function, to

generate a correction function in dependence on the associated position and an amplitude

of the maximum; and

a combining device which is connected to the model path and the transmit path,

the combining device configured to subtract the correction function from the data symbol

on the transmit path.

Claim 14 (new). The circuit according to claim 13, wherein the model path further

comprises an oversampling device operably coupled to the model filter, and a bypass

device configured to selectively bypass the oversampling device.

Claim 15 (new). The circuit according to claim 14, wherein the model path further

comprises a switching device configured to selectively cause the bypass device to bypass

the oversampling device.

Claim 16 (new). The circuit according to claim 14, wherein the oversampling device is

configured to perform a two-fold oversampling of the data symbol.

Claim 17 (new). The circuit according to claim 14, wherein the model filter is configured

to have filter coefficients that are identical for data symbols supplied to the model filter

via the oversampling device and for data symbols supplied to the model filter via the

bypass device.

Claim 18 (new). The circuit according to claim 17, wherein the model filter comprises a non-recursive filter which has a characteristic of a filter following the circuit for reducing the crest factor.

Claim 19 (new). A multi-mode modem for a multi-carrier data transmission system, which includes a circuit for reducing the crest factor of a data symbol to be transmitted in a multi-carrier data transmission system, the data symbol being a function of a plurality of signals provided within a predetermined time interval, each of the plurality of signals allocated to a carrier, each carrier occupying at least one frequency from a transmit data spectrum, at least one carrier being reserved which is not provided for the data transmission, the circuit comprising:

a transmit path configured to receive the data symbol;

a model path arranged in parallel with a section of the transmit path the model path comprising

a model filter configured to receive the data symbol in non-oversampled format,

an oversampling device operably coupled to an input of the model filter, and a bypass device configured to selectively bypass the oversampling device.

an analysis and evaluation circuit arranged following the model filter and configured to determine whether the time domain function of the data symbol exhibits within a predetermined time interval at least one maximum which exceeds a first threshold, and further configured to determine an associated position of the maximum

within the time interval, and, by scaling and displacing a dirac-like sample function, to

generate a correction function in dependence on the associated position and an amplitude

of the maximum;

a combining device which is connected to the model path and the transmit path,

and configured to subtract the correction function from the data symbol on the transmit

path to generate a corrected data symbol; and

modem circuitry configured to transmit the corrected data symbol, which exhibits

a power density spectrum according to a PSD mask both according to the ADSL standard

and according to the ADSL+ standard.

Claim 20 (new). A method for reducing the crest factor of a data symbol to be

transmitted using a circuit in a multi-carrier data transmission system, the data symbol

being a function of a plurality of signals provided within a predetermined time interval,

each of the plurality of signals allocated to a carrier, each carrier occupying at least one

frequency from a transmit data spectrum, at least one carrier being reserved which is not

provided for the data transmission, the circuit comprising

a transmit path configured to receive the data symbol,

a model path arranged in parallel with a section of the transmit path the model

path comprising

a model filter configured to receive the data symbol,

an analysis and evaluation circuit arranged following the model filter and

configured to determine whether the time domain function of the data symbol exhibits

within a predetermined time interval at least one maximum which exceeds a first

threshold, and further configured to determine an associated position of the maximum

within the time interval, and, by scaling and displacing a dirac-like sample function, to

generate a correction function in dependence on the associated position and an amplitude

of the maximum, and

a combining device which is connected to the model path and the transmit path,

and configured to subtract the correction function from the data symbol on the transmit

path,

the method comprising:

oversampling the data symbol two-fold and providing the oversampled data

symbol to the model filter when the data symbol is part of an ADSL data transmission;

and

providing data symbol in non-oversampled format to the model filter when the

data symbol is part of an ADSL+ data transmission.

Claim 21 (new). A method according to claim 20, wherein filter operations of the model

filter are performed with a single sampling rate for both oversampled data symbols and

non-oversampled data symbols.

Claim 22 (new). A method according to claim 21, further comprising using correction

functions of constant length for the data symbol that is part of the ADSL data

transmission and for the data symbol that is part of the ADSL+ data transmission.

Claim 23 (new). A method according to claim 20, further comprising using correction

functions of constant length for the data symbol that is part of the ADSL data

transmission and for the data symbol that is part of the ADSL+ data transmission.

Claim 24 (new). A method for reducing the crest factor of a data symbol using a circuit

in a multi-carrier data transmission system, the data symbol being a function of a plurality

of signals provided within a predetermined time interval, each of the plurality of signals

allocated to a carrier, each carrier occupying in each case at least one frequency from a

transmit data spectrum, at least one carrier being reserved which is not provided for the

data transmission, the circuit comprising

a transmit path configured to receive the data symbol,

a model path arranged in parallel with a section of the transmit path the model

path comprising

a model filter configured to receive the data symbol,

an analysis and evaluation circuit arranged following the model filter and

configured to determine whether the time domain function of the data symbol exhibits

within a predetermined time interval at least one maximum which exceeds a first

threshold, and further configured to determine an associated position of the maximum

within the time interval, and, by scaling and displacing a dirac-like sample function, to

generate a correction function in dependence on the associated position and an amplitude

of the maximum, and

a combining device which is connected to the model path and the transmit path,

and configured to subtract the correction function from the data symbol on the transmit

path,

the method comprising:

using L-fold oversampling of the data symbol on the model path,

storing, for the model path, only a single sample correction signal for reducing the crest factor; and

deriving a remaining L-1 sample correction signals using cyclic time displacement and scaling in the time domain.

Claim 25 (new). The method according to claim 24, further comprising selecting dirac-like sample correction signals having time-displaced variants with substantially similar aliasing for reducing the crest factor.